TIDA-00398 Test Report

Jing Zou *BMS/WLPC*

Abstract

TI design TIDA-00398 is a complete charger module for evaluating compact, flexible, high-efficiency, USB-friendly, switch-mode charge management solution for single-cell Li-ion and Li-polymer battery used in a wide range of portable applications.

It features terminal blocks and standard headers for IN, SYS, BAT, TS and USB connector for IN. The battery voltage, charge current, input current, and status are programmable via I^{2}C interface. Status signals are indicated by LEDs.

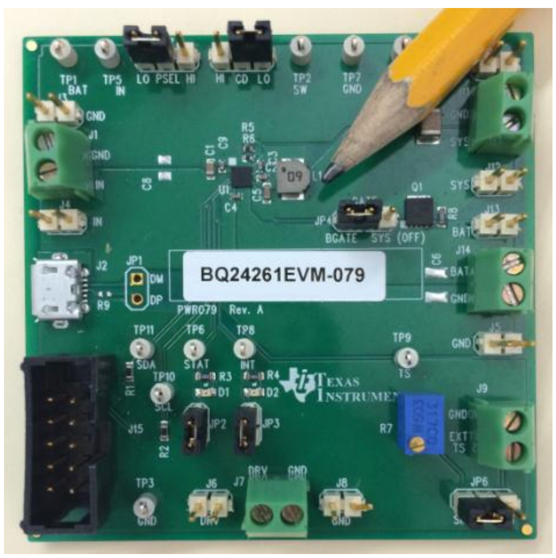

Figure 1. Board Photo

Document History

Version	Date	Author	Notes
1.0	November 5, 2014	Jing Zou	First release

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Bench Set up

- TIDA-00398 was tested on a bench setup with the PWR611 USB to I^2C communication kit and BQ2426xEVM software. The test equipment is as follows:
  - Oscilloscope: Tektronix TDS3040, 300 MHz
  - Passive Voltage Probes (4) : Tektronix P6139A – 500 Mhz, 8 pF, 10 MΩ, 10x
  - Current Probe: Tektronix TCP202A Current Probe
  - Power Supply: Agilent E3648A, Keithley Source Meter 2430
  - Electronic Load: Keithley Source Meter 2420
  - Keysight Technology (HP/Agilent) Multi-meter 34401A
  - Wireless Power Transmitter: TI bq500212AEVM-550 PWR550

PWR611 USB to I^2C Communication Kit

- Testing was done with the following connection of PWR611 kit and evaluation software
  - Connect J15 to PWR611 kit by 10-pin ribbon cable. Connect the USB port of the PWR611 kit to the USB port of the computer. The connections are shown in Figure 2.

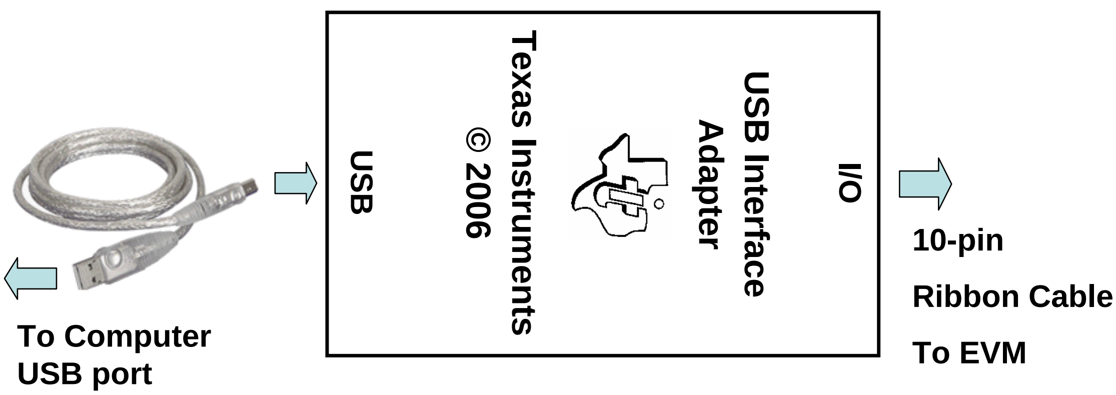


Figure 2. Connections of PWR611 Kit

  - Unzip BQ2426xSW.zip and double click on the “SETUP.EXE” file. Follow the installation instruction. The main window of the software is shown in Figure 3.

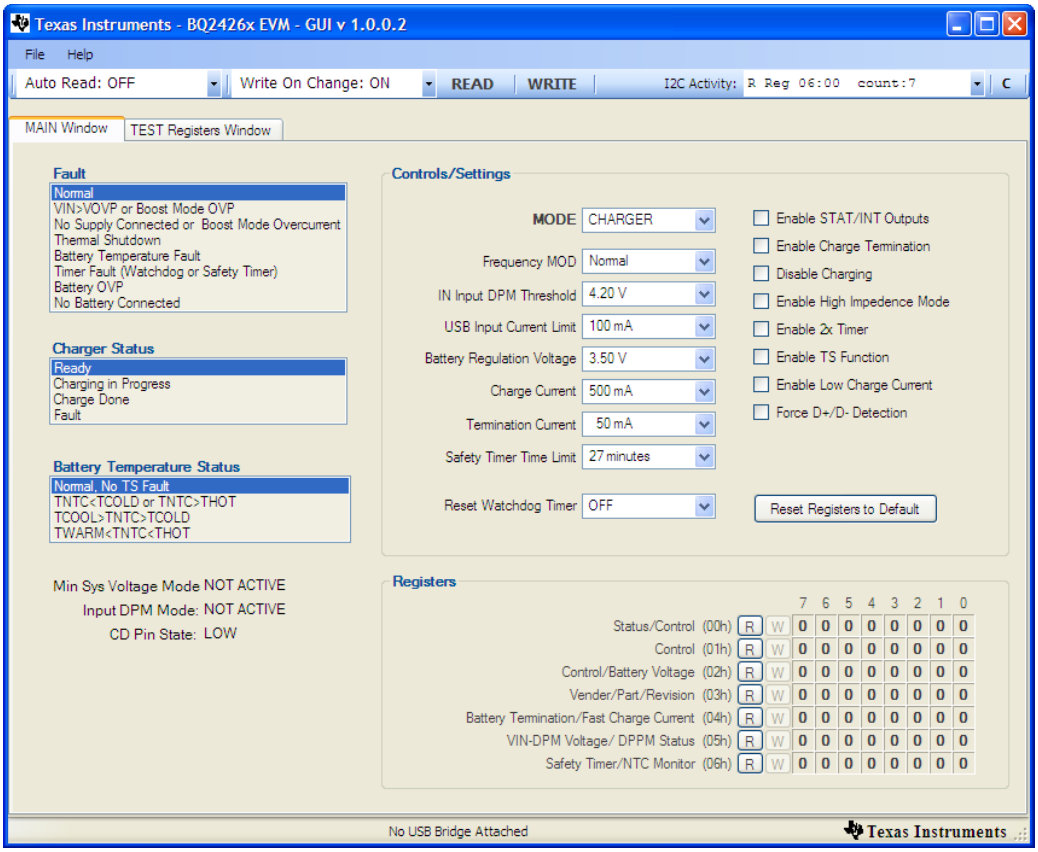


Figure 3. The Main Window of the bq2426x Evaluation Software

Schematic

- The schematic shown in Figure 4 illustrates the implementation of bq24261 for evaluation.

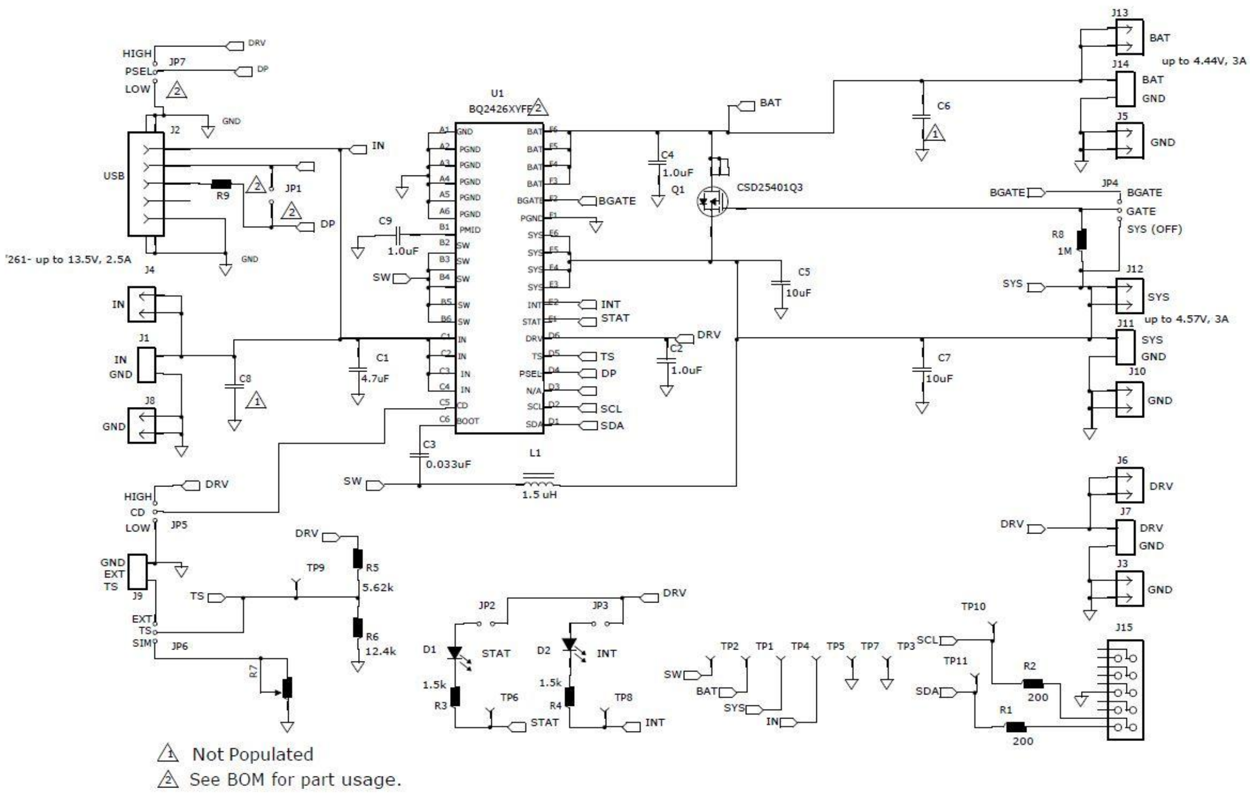


Figure 4. bq24261 Schematic

Efficiency

- Figure 5 shows the efficiency across the power range with the bq24261.

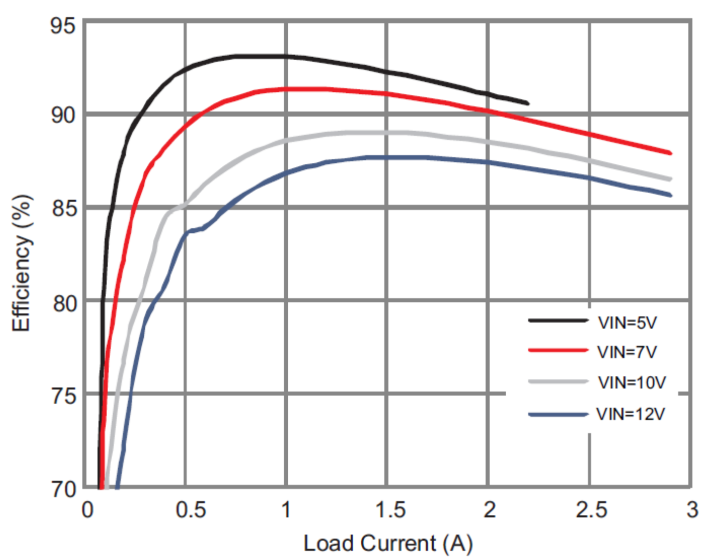
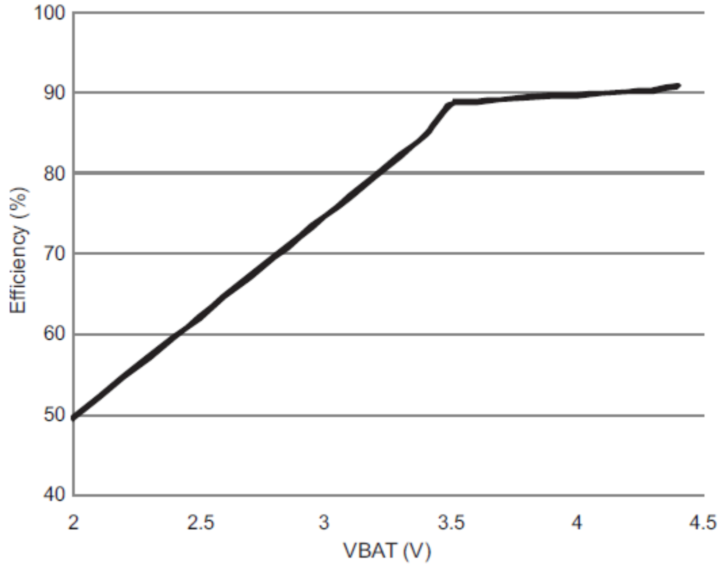


Figure 5. TIDA-00398 Efficiency vs Output Current

- Figure 6 shows efficiency on battery regulation.



Firure 6. TIDA-00398 Efficiency vs Battery Voltage

Charge Cycle

- The TIDA-00398 board was used for the charge cycle profile in Figure 7. 3100mAh and 4.35V battery is used for testing.

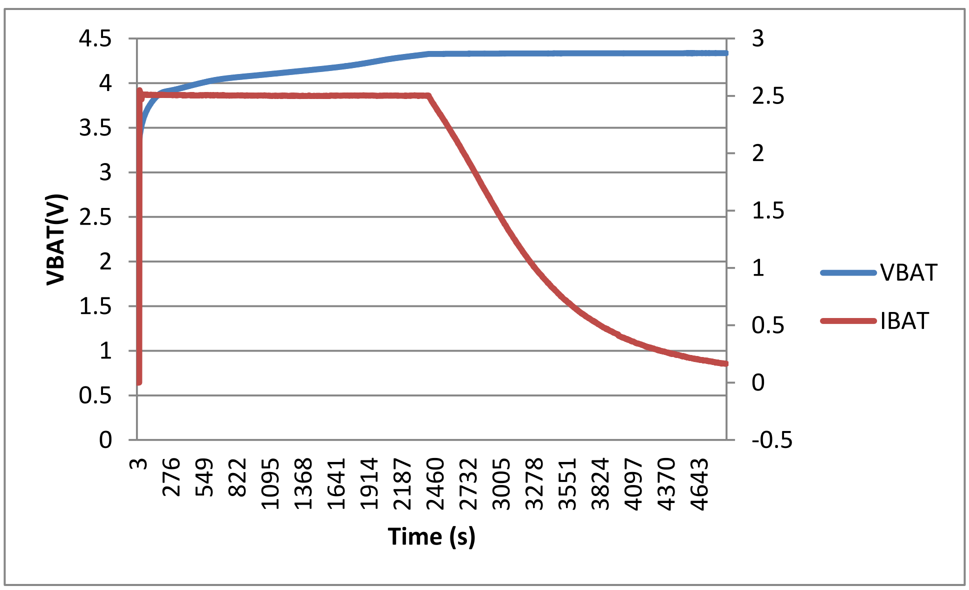


Figure 7. 2.5A Charge Current 9V Input Voltage with 3100mAh 4.35V Battery

Load Transient Testing

- The TIDA-00398 board was used for load transient testing. Figure 8 show the load transient response step from 100mA to 3.3A with Supplement Mode

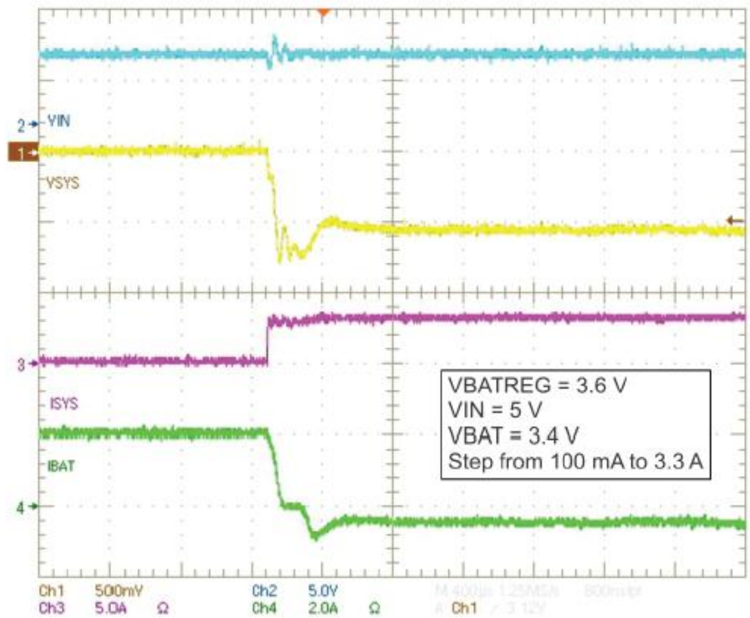


Figure 8. VSYS Transient with Supplement Mode

Boost Startup Testing

- Figure 9 shows the boost startup with no load. Figure 10 shows boost startup with 1A load.

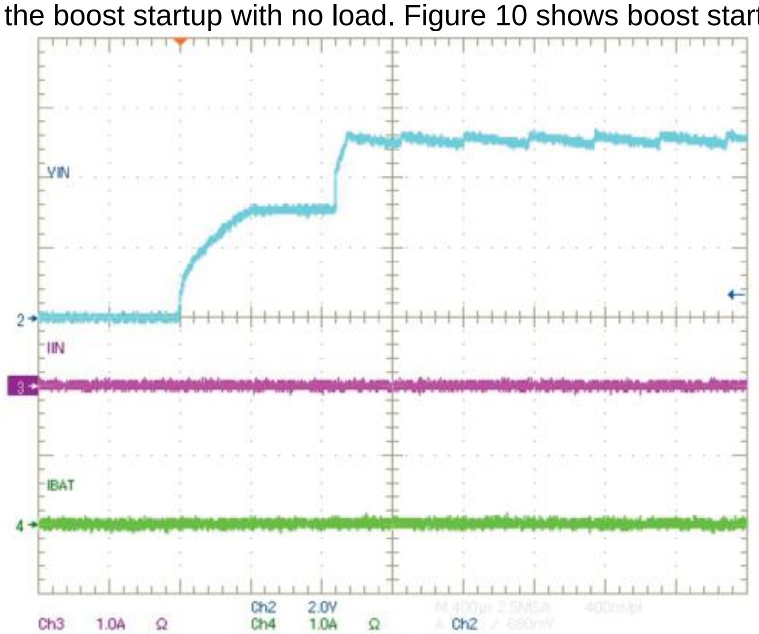


Figure 9. Boost Startup with No Load

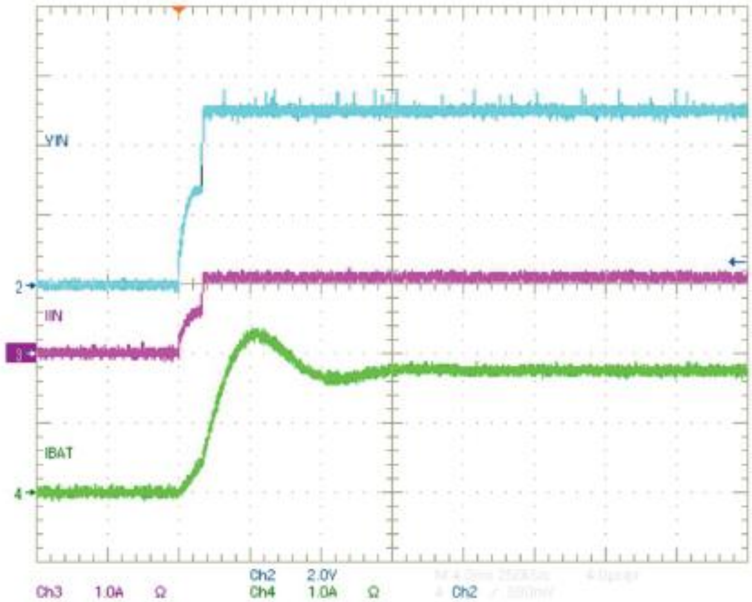


Figure 10. Boost Startup with 1A Load

Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265